Equipment for cycle tracks, trestles and bridges.

BACKGROUND OF THE INVENTION

1. Field of the invention

The present invention is intended for urban and sub-urban highways and first of all for special cycle tracks and relates to its specific equipment.

2. Description of the Related Art

It is known that cycle tracks that are built together or near traffic lanes exist. Special dedicated (for example, elevated) cycle tracks, which are intended especially for bicycle traffic, are also known. Both of the mentioned cycle tracks are sometimes equipped by parking devices.

Cycle tracks located near other traffic lanes have the following disadvantages: high risk of traffic accidents, high gas pollution, intersection with other roads, the traffic is possible only along the highway, unfavorable relief (ascents) and weather conditions (wind, rain, cold, heat).

Elevated cycle tracks do not have most of these disadvantages. They can smoothly go through buildings and are not limited by street directions only. But ascents (including entries on a bridge or a trestle) and unfavorable weather conditions still have place, limiting the possibilities of application of special light elevated cycle tracks.

All of the above mentioned disadvantages of the known cycle tracks, trestles and bridges limit any further expansion of bicycle transportation, which is most ecologically clean and physiologically healthy.

SUMMARY OF THE INVENTION

The aim of the present invention is equipping of cycle tracks, elevated cycle tracks and bridges with facilities, devices and assemblies which eliminate the influence of outer disturbing factors and also convert these factors to the benefit of cyclists and other users of operator-powered vehicles. The presented aim is achieved by more effective use of the existing cycle tracks, elevated cycle tracks and bridges equipment (ramps, hand-rails, parking assemblies for bicycles), as well as applying of new equipment.

For easing steep ascents for bicycles, a gutter, which frees the hands of the cyclist, is formed on the ramp. Hand-rails for the hands of the cyclist are also installed. This equipment allows using not only the leg muscles of the cyclist during the ascent, but also using his hand-muscles as well as the power of his weight, all because he can ride upwards standing on the pedals and pulling up himself using the hand-rails. The gutter does not allow the front wheel to deviate. The hand-rails provide the cyclist with vertical stability.

Cycle tracks, elevated cycle tracks and bridges can also be equipped with roofs and side walls (including transparent) which preserve the cyclist from the sun, rain and side or contrary wind. It is known that the direction and force of an air flow, because of high windage of the cyclist, has a serious influence on the cyclist's movement and speed. Thus, jalousies are provided in the side walls in order to allow the passing of an outer air only in direction of the cyclist's movement.

The jalousies can be equipped by automatic and/or remote control.

On the mentioned roof, above the cycle track, a wind-catcher can be installed, containing an upright frame which is blown through by the wind from all sides. The ribs of the frame are connected one to another by crossbars. Valves, which are hanged under the crossbars, direct the outer air flow from any direction via an embrasure in the roof downwards to the cycle track in the direction of the cyclists' movement. An analogous wind-catcher (a patent of the Russian Federation № 1731740 from 23/03/1993) was used for water airing in reservoirs.

Inside the mentioned cycle track with walls and a roof, hinged embrasures, which serve as a barrier for an air flow that is coming from the opposite direction to the cyclist's movement, can be installed. In the same time, the mentioned hinged embrasures do not disturb the movement of the cyclist, or the air flow in the direction of the cyclist's movement.

The mentioned hinged embrasures can be equipped by automatic and/or remote control.

On the roof of the mentioned cycle track with a wind-catcher, a wind-driven unit that is intended for placing on the way of the air flow can be installed. When needed, this unit can be installed under the wind-catcher. The unit has a wind-driven engine and an electric generator connected to

it. When there are few cyclists on the cycle track, or there aren't any at all (for example at night), and the outer air flow is effective enough, this wind-driven unit supplies consumers with electric energy or accumulates it. Along the ribs of the wind-catcher's frame vertical fatnesses, which concentrate the outer wind flow, can be installed.

The surface coating of any cycle track can have a steep ascent and a further small slope in the cyclist's movement direction. To do this, a slope for cyclists, For example containing a ramp with a gutter and hand-rails as shown on **Fig. 1**, is installed on some place. Further, the roadbed is laid with a small, but long slope in the direction of the cyclist's movement. After it, the roadbed can be horizontal (for example, as it is shown on **Fig. 2**) with the subsequent ascent with the help of the above mentioned ramp with a further small slope. Such a construction of the roadbed makes the movement of the cyclists significantly easier and faster. Devices for parking bicycles as well as bicycles for rent can be added to all of the above mentioned equipment for cycle tracks. The cycle tracks themselves can be made elevated and even pass through buildings.

The mentioned equipment for comfortable riding on a bicycles can be used effectively also on common (together with cars) thoroughfares as well as on constructions intended for holding sport events.

In order to estimate the cycle track from a transport possibilities point of view, the following should be considered. The carrying capacity of a one-way elevated cycle track (or any other cycle track but without intersections) is about 4,000 cyclists per hour, which significantly exceeds the carrying capacity of a multi-way motor road in a city. In accordance to my applications N№ 10/107,187 (filling date 03/28/2002); 10/262,961 (filling date 10/03/2002); 10/330,227 (filling date 12/30/2002); 10/403,288 (filling date 04/01/2003) US patents, the carrying capacity of modernized bicycles can be increased approximately by 3 times. When using them, the carrying capacity of a one-way cycle track will be about 12,000 cyclists per hour, and a two-way, 1.5 meters wide cycle track will be not less than 20,000 cyclists per hour. Only a metropolitan can compete with such a cycle track, the capital outlays and operating costs of which are 1,000-10,000 times higher. The sanitary healthy and ecological effects are not yet evaluated here.

3. BRIEF DESCRIPTION OF THE DRAWINGS

The essence of the present invention is explained by its preferred embodiment and by the following drawings.

Fig. 1 shows the ramp from the entrance to a bridge or a trestle.

Fig. 2 shows a side view of a covered elevated cycle track with transparent side walls and a wind-catcher on the roof.

Fig. 3 shows an upper view of the same covered elevated cycle track that has two-direction bicycle traffic.

4. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig. 1 shows a cyclist that is rotating the pedals and pulling himself up with the help of his hands using hand-rails **2** while entering ramp **1**. The front wheel is held in a straight position with the help of gutter **3**, which is laid on the entry part of the ramp. Cycling upright is also possible by leaning on the hand-rails and pushing the pedals by one's body weight. The ascent can have a place not only at the entry to a bridge or a trestle. It is advisably to provide the cycle track with a ramp that has an ascent, as it is shown on **Fig.1**, when there is a cycle track with a long gentle ascent, so that after the legs and hands effort is spent on the ramp, the cyclist will have the possibility to ride on a horizontal cycle track, or a cycle track that has a slight slope in the direction of the movement. Even a small 1/200 slope (descending 1 meter during every 200 meters) will significantly makes riding a bicycle easier.

Fig. 2 shows trestle **4**, which has two-direction traffic, resting on supports **5**. The trestle is covered by transparent walls **6** and by roof **7**, on which wind-catcher **8** and wind-driven unit **9** are installed. Jalousies **10**, which allow the wind flow to pass in the direction of the cyclist's movement, are installed in walls **6**. The directions of traffic on the trestle are separated by wind-proof partition **11**. The main part of the wind-catcher is an upright frame with vertical ribs **12**. The wind can blow the frame from all directions. In the upper part of the wind-catcher's frame, under roof **13**, crossbars **14** are placed, to which flexible valves – sails **15**, which descend from the inner side of the four facets of the frame down to airway **16** closing it from both sides, are connected. The middle part of the frame includes horizontal strings **17** (laths), which prevent valves **15** from blowing out of the frame. Pole **18**, mounted into the ground, is installed on some distance along each rib **12**. Flatness **19** is fixed between this pole and the rib and provides a concentration of outer air flow, which is blowing into the frame. A wind-driven unit is installed in its frame **20**. This unit contains wind engine **21** and electric generator **22**, which is connected

to the engine. The unit is intended for installation in airway **16** in times when the trestle does not need a big air flow (for example at night). The energy accumulated by this unit can be used for artificial supercharge of air to the trestle in times of a calm. The air flow, which got into the airway, is turned on each side of the traffic on the trestle with the help of sloping guides **23**. In order to prevent air blowing in a direction opposite to the cyclists' movement direction, slit embrasures **24**, which prevent reverse movement of air, are installed on each side of the trestle. The cyclist rides freely through embrasures **24**. In order to prevent air leaking from the trestle, jalousies **10** are equipped by a remote control.

Fig. 3 shows the same elevated cycle track (upper view) when roof **13** of the wind-catcher frame is removed. The direction of the cyclists' movement is shown here by arrows (right-side traffic). It is clearly seen here that wind-driven engine **21** is a rim with radial fans and a vertical axle, which rotates by wind flow in airway **16**.

While the present has been described with what is considered the most practical and preferred embodiment, it is to be understood that the present invention is not limited to the sole embodiment described above, but encompasses any all embodiments within the scope of the following claims.

Inventor: Pol Raikin.